

WHAT IS CLAIMED IS:

1. An image processing apparatus comprising:

a programmable image processing unit which processes image data as a visualized image, the image data represented
5 by a digital signal generated based on an image, and allows realization of a plurality of image formation operations;

an image data storage unit that stores the image data;

an image data storage management unit which manages access to said image data storage section; and

10 an image data transmission management unit which manages transmission of the image data between a data bus transmitting the image data and a processing unit used for the image processing conducted by said image processing unit,

wherein said image processing unit having,

15 a SIMD (Single Instruction stream Multiple Data stream) type data operation unit;

a plurality of memories used for the image processing conducted by said SIMD type data operation unit;

a memory controller controlling said plurality of
20 memories;

a memory switch controlling connection of said plurality of memories;

a plurality of data buses for inputting and outputting the image data;

25 a bus switch controlling connection between said

plurality of data buses and said data operation unit; and
at least one auxiliary operation unit which assists
said data operation unit.

5 2. The image processing apparatus according to claim 1,
wherein said memory controller and said memory switch
selectively connect any one or more memories out of said
plurality of memories to said data operation unit, and
thereby change a memory capacity allotted to each image
10 formation operation among the plurality of image formation
operations.

3. The image processing apparatus according to claim 1,
wherein said memory controller and said memory switch
15 control said plurality of data buses and change an image
data transfer width allotted to each image formation
operation among the plurality of image formation operations.

4. The image processing apparatus according to claim 1,
20 wherein a plurality of said auxiliary operation units
are provided and at least one of said auxiliary operation
units has a non-SIMD type constitution for executing a
consecutive operation processing.

5. An image processing apparatus comprising:

a programmable image processing means for processing image data as a visualized image, the image data represented by a digital signal generated based on an image, and allows
5 realization of a plurality of image formation operations;

an image data storage means for storing the image data;

an image data storage management means for managing access to said image data storage section; and

an image data transmission management means for
10 managing transmission of the image data between a data bus transmitting the image data and a processing means used for the image processing conducted by said image processing means,

wherein said image processing means having,

15 a SIMD (Single Instruction stream Multiple Data stream) type data operation means;

a plurality of memories used for the image processing conducted by said SIMD type data operation means;

a memory controller controlling said plurality of
20 memories;

a memory switch controlling connection of said plurality of memories;

a plurality of data buses for inputting and outputting the image data;

25 a bus switch controlling connection between said

plurality of data buses and said data operation means; and
at least one auxiliary operation means which assists
said data operation means.

5 6. The image processing apparatus according to claim 5,
wherein said memory controller and said memory switch
selectively connect any one or more memories out of said
plurality of memories to said data operation means, and
thereby change a memory capacity allotted to each image
10 formation operation among the plurality of image formation
operations.

7. The image processing apparatus according to claim 5,
wherein said memory controller and said memory switch
15 control said plurality of data buses and change an image
data transfer width allotted to each image formation
operation among the plurality of image formation operations.

8. The image processing apparatus according to claim 5,
20 wherein a plurality of said auxiliary operation means
are provided and at least one of said auxiliary operation
means has a non-SIMD type constitution for executing a
consecutive operation processing.

9. An image processing method for processing image data represented by a digital signal based on an image to allow outputting the image data as a visualized image on a programmable image processing unit, the programmable image processing unit comprising a SIMD type data operation unit, a plurality of memories used for an image processing conducted by the SIMD type data operation unit, a memory controller controlling the plurality of memories and a memory switch controlling connection of the plurality of memories, and allowing realizing a plurality of image formation operations, the method comprising the step of:

selectively connecting the plurality of memories to said data operation unit by using the memory controller and the memory switch thereby changing a memory capacity allotted to each image formation operation among the plurality of image formation operations.

10. An image processing method for processing image data represented by a digital signal based on an image to allow outputting the image data as a visualized image on a programmable image processing unit, the image processing unit comprising a SIMD type data operation unit, a plurality of memories used for an image processing conducted by the SIMD type data operation unit, a memory controller controlling the plurality of memories, a memory switch

controlling connection of the plurality of memories, a plurality of data buses for inputting and outputting the image data, a bus switch controlling connection between the plurality of data buses and the data operation unit, and
5 an auxiliary operation unit for assisting in the data operation unit, the method comprising the step of:

controlling said plurality of data buses and said plurality of memories by using said memory controller and said bus switch thereby changing an image data transfer width
10 allotted to each image formation operation among the plurality of image formation operations.

11. A computer readable medium for storing instructions, which when executed by a computer, causes the computer to
15 perform an image processing method for processing image data represented by a digital signal based on an image to allow outputting the image data as a visualized image on a programmable image processing unit, the programmable image processing unit comprising a SIMD type data operation unit,
20 a plurality of memories used for an image processing conducted by the SIMD type data operation unit, a memory controller controlling the plurality of memories and a memory switch controlling connection of the plurality of memories, and allowing realizing a plurality of image formation
25 operations, the method comprising the step of:

selectively connecting the plurality of memories to
said data operation unit by using the memory controller and
the memory switch thereby changing a memory capacity allotted
to each image formation operation among the plurality of
5 image formation operations.

12. A computer readable medium for storing instructions,
which when executed by a computer, causes the computer to
perform an image processing method for processing image data
10 represented by a digital signal based on an image to allow
outputting the image data as a visualized image on a
programmable image processing unit, the image processing
unit comprising a SIMD type data operation unit, a plurality
of memories used for an image processing conducted by the
15 SIMD type data operation unit, a memory controller
controlling the plurality of memories, a memory switch
controlling connection of the plurality of memories, a
plurality of data buses for inputting and outputting the
image data, a bus switch controlling connection between the
20 plurality of data buses and the data operation unit, and
an auxiliary operation unit for assisting in the data
operation unit, the method comprising the step of:

controlling said plurality of data buses and said
plurality of memories by using said memory controller and
25 said bus switch thereby changing an image data transfer width

allotted to each image formation operation among the plurality of image formation operations.

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